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|---|---|
| LEUNG, CHRISTINA Y | |

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| 2613 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| *Office Action Summary* | **Application No.** 10/825,529 | **Applicant(s)** BORODITSKY ET AL. | |
|---|---|---|---|
| | **Examiner** Christina Y. Leung | **Art Unit** 2613 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *15 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,6-12 and 18-25* is/are rejected.

7)☒ Claim(s) *2-5 and 13-17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4-15-04; 9-14-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 6-8, 12, 18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Chowdhury et al. (US 6,563,590 B2).

Regarding claim 1, Chowdhury et al. disclose an apparatus for measuring a set of frequency-resolved states of polarization of an optical signal (Figure 1) comprising:

a local oscillator (including laser 12; column 4, lines 24-26), the local oscillator comprising an initial polarization state;

a polarization scrambler (including polarization transformer 14), the polarization scrambler modulating the initial polarization state of the local oscillator to generate a polarization-scrambled signal (column 4, lines 24-46);

a coupler 7, the coupler mixing the polarization-scrambled signal with at least a fraction of the optical signal to generate a heterodyned signal, the heterodyned signal comprising a radio frequency signal component (column 4, lines 14-22); and

an analyzer (including receiver 8 and processor 9), the analyzer passing a fixed polarization component of the at least the fraction of the optical signal and resolving the fixed

polarization component in frequency from the radio frequency signal component (column 4, lines 14-67; column 6, lines 34-46).

Regarding claim 6, Chowdhury et al. disclose that the local oscillator is tuned to yield a beat frequency, the beat frequency being equal to at least twice a bandwidth of the optical signal (column 4, lines 51-53).

Regarding claims 7 and 8, Chowdhury et al. disclose an optical out-coupler comprising an optical coupler, the optical out-coupler tapping the at least the fraction of the optical signal from a working optical channel of an optical telecommunication system (Figure 1 shows an unlabeled coupler element that is coupled to transmitter 2 and transmits the optical signal into two paths).

Regarding claim 12, Chowdhury et al. disclose a method for measuring a set of frequency-resolved states of polarization of an optical signal (Figure 1) comprising the steps of:

tuning a local oscillator (including laser 12) to a first local oscillator frequency to generate a first local oscillator signal (column 4, lines 24-26);

polarization-modulating an initial state of polarization of the first local oscillator signal to generate a polarization-scrambled signal (using polarization transformer 14; column 4, lines 24-46);

mixing (using coupler 7) the polarization-scrambled signal with at least a fraction of the optical signal to produce a heterodyned signal, the heterodyned signal comprising a radio frequency signal component centered at a first beat frequency, the first beat frequency being equal to a difference between the first local oscillator frequency and a carrier frequency of the optical signal (column 4, lines 14-22);

analyzing frequency components and polarization components of the radio frequency signal component (using receiver 8 and processor 9; column 4, lines 14-67; column 6, lines 34-51); and

generating a first set of frequency-resolved states of polarization from the frequency components and polarization components (column 6, lines 34-51).

Regarding claim 18, Chowdhury et al. disclose:

tuning the local oscillator to a second local oscillator frequency to generate a second local oscillator signal (column 4, lines 43-56);

polarization-modulating a second initial state of polarization of the second local oscillator signal to generate a second polarization-scrambled signal (column 4, lines 24-46);

mixing the second polarization-scrambled signal with at least the fraction of the optical signal to produce a second heterodyned signal, the second heterodyned signal comprising a second radio frequency signal component centered at a second beat frequency, the second beat frequency being equal to a difference between the second local oscillator frequency and the carrier frequency of the optical signal (column 4, lines 14-22);

analyzing a second set of frequency components and polarization components of the second radio frequency signal component (column 4. lines 14-67; column 6, lines 34-51); and

generating a second set of frequency-resolved states of polarization from the second set of frequency components and polarization components (column 6, lines 34-51).

Regarding claim 20, Chowdhury et al. disclose that the optical signal is from a working channel of an optical telecommunication system, the method further comprising the step of tapping the at least the fraction of the optical signal from the working channel for mixing with

the polarization-scrambled signal (Figure 1 shows an unlabeled coupler element that is coupled to transmitter 2 and transmits the optical signal into two paths).

3. Claims 1, 7, 8, 12, 18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Bandemer et al. (WO 01/067649 A1; see also US 6,885,783 B2 for equivalent English-language disclosure).

*Since WO 01/067649 A1 is in German, all references to the contents of its disclosure in this Office Action are made to the equivalent English-language patent family document, US 6,885,783 B2.*

Regarding claim 1, Bandemer et al. disclose an apparatus for measuring a set of frequency-resolved states of polarization of an optical signal (Figure 1) comprising:

a local oscillator (laser 2), the local oscillator comprising an initial polarization state (column 4, lines 35-41);

a polarization scrambler 4, the polarization scrambler modulating the initial polarization state of the local oscillator to generate a polarization-scrambled signal (column 4, lines 41-43);

a coupler 5, the coupler mixing the polarization-scrambled signal with at least a fraction of the optical signal to generate a heterodyned signal, the heterodyned signal comprising a radio frequency signal component (column 4, lines 43-52); and

an analyzer (including receiver 6, filter and evaluation unit 7, and control and calculation unit 3), the analyzer passing a fixed polarization component of the at least the fraction of the optical signal and resolving the fixed polarization component in frequency from the radio frequency signal component (column 4, lines 49-58).

Regarding claims 7 and 8, Bandemer et al. disclose an optical out-coupler comprising an optical coupler (i.e., coupler 26 in Figure 7), the optical out-coupler tapping the at least the fraction of the optical signal from a working optical channel of an optical telecommunication system (column 6, lines 9-12).

Regarding claim 12, as similarly discussed above with regard to claim 1, Bandemer et al. disclose a method for measuring a set of frequency-resolved states of polarization of an optical signal (Figure 1) comprising the steps of:

tuning a local oscillator (laser 2) to a first local oscillator frequency to generate a first local oscillator signal (column 4, lines 35-41);

polarization-modulating an initial state of polarization of the first local oscillator signal to generate a polarization-scrambled signal (using polarization controller 4; column 4, lines 41-43);

mixing the polarization-scrambled signal with at least a fraction of the optical signal to produce a heterodyned signal, the heterodyned signal comprising a radio frequency signal component centered at a first beat frequency, the first beat frequency being equal to a difference between the first local oscillator frequency and a carrier frequency of the optical signal (using coupler 5; column 4, lines 43-52);

analyzing frequency components and polarization components of the radio frequency signal component (column 4, lines 49-58); and

generating a first set of frequency-resolved states of polarization from the frequency components and polarization components (column 4, lines 49-58).

Regarding claim 18, Bandemer et al. disclose:

tuning the local oscillator to a second local oscillator frequency to generate a second local oscillator signal (column 4, lines 35-41 and lines 58-64);

polarization-modulating a second initial state of polarization of the second local oscillator signal to generate a second polarization-scrambled signal (column 4, lines 41-43);

mixing the second polarization-scrambled signal with at least the fraction of the optical signal to produce a second heterodyned signal, the second heterodyned signal comprising a second radio frequency signal component centered at a second beat frequency, the second beat frequency being equal to a difference between the second local oscillator frequency and the carrier frequency of the optical signal (column 4, lines 43-52);

analyzing a second set of frequency components and polarization components of the second radio frequency signal component (column 4, lines 49-58); and

generating a second set of frequency-resolved states of polarization from the second set of frequency components and polarization components (column 4, lines 49-58).

Regarding claim 20, Bandemer et al. disclose that the optical signal is from a working channel of an optical telecommunication system, the method further comprising the step of tapping the at least the fraction of the optical signal from the working channel for mixing with the polarization-scrambled signal (using coupler 26 shown in Figure 7; column 6, lines 9-12).

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chowdhury et al.

Regarding claim 19, Chowdhury et al. disclose a method as discussed with regard to claim 1 and further disclose combining the first set of frequency-resolved states of polarization with the second set of frequency-resolved states of polarization to form a combined set (column 6, lines 34-51), but they do not further disclose smoothing a noise component in the combined set.

However, it is generally well understood in the art that noise in a signal/value is undesirable and may be advantageously removed in order to improve the desired signal. It would have been obvious to a person of ordinary skill in the art to smooth a noise component in the combined set of values in the method disclosed by Chowdhury et al. in order to obtain a cleaner output and thereby generate further calculations more effectively with this cleaner data.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bandemer et al.

Regarding claim 19, Bandemer et al. disclose a method as discussed with regard to claim 1 and further disclose combining the first set of frequency-resolved states of polarization with the second set of frequency-resolved states of polarization to form a combined set (column 4, lines 53-58), but they also do not further disclose smoothing a noise component in the combined set.

However, it is generally well understood in the art that noise in a signal/value is undesirable and may be advantageously removed in order to improve the desired signal. It would have been obvious to a person of ordinary skill in the art to smooth a noise component in the combined set of values in the method disclosed by Bandemer et al. in order to obtain a cleaner output and thereby generate further calculations more effectively with this cleaner data.

7. Claims 9-11 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chowdhury et al. in view of Boroditsky et al. (Boroditsky, M. et al. "In-Service Measurements of Polarization-Mode Dispersion and Correlation to Bit-Error Rate," IEEE Photonics Technology Letters, Vol. 15, No. 4, 02 April 2003").

The "Boroditsky et al." article is listed as having a publication date of "April 2003" with no specific day noted in Applicants' Information Disclosure Statement filed 15 April 2004. However, Examiner respectfully notes that the IEEE online archive of the journal more specifically states that this article was "Posted online 2003-04-02."

Regarding claims 9-11, Chowdhury et al. disclose a system as discussed above with regard to claim 1. Chowdhury et al. further disclose a processor 9, the processor calculating a polarization mode dispersion of the optical device transmitting the optical signal, wherein the optical device is a working optical channel, and further disclose a compensation system 10, wherein the processor further determines a compensation for feedback to the working optical channel, the compensation system receiving the compensation and modifying the optical signal to compensate for the polarization mode dispersion (column 4, lines 20-22; column 6, lines 34-46).

Regarding claims 9-11, Chowdhury et al. do not specifically disclose a polarization controller set to sequentially produce at least two input polarization states of the at least the fraction of the optical signal through an optical device, wherein at least two sets of frequency-resolved states of polarization are measured at an output of the optical device, one for each of the at least two input polarization states.

However, Boroditsky et al. teach a system that is related to the one disclosed by Chowdhury et al., including means for measuring polarization mode dispersion, and Boroditsky et al. further suggest a polarization controller PC1 set to sequentially produce at least two input polarization states of the at least the fraction of the optical signal through an optical device, wherein at least two sets of frequency-resolved states of polarization are measured at an output of the optical device, one for each of the at least two input polarization states (Figure 1; see section "II. Experimental Setup and Results," especially the first three paragraphs of that section).

Regarding claims 9-11, it would have been obvious to a person of ordinary skill in the art to include a polarization controller configured as suggested by Boroditsky et al. in the system disclosed by Chowdhury et al. in order to provide various inputs into the measurement system and thereby improve the accuracy of the measurements.

Regarding claim 21, as similarly discussed above with regard to claims 12 and 18, Chowdhury et al. disclose a method for measuring a polarization mode dispersion of an optical device (Figure 1), comprising the steps of:

(a) tuning a local oscillator (laser 12) to a local oscillator frequency to generate a local oscillator signal (column 4, lines 24-26);

(b) polarization-modulating an initial state of polarization of the local oscillator signal to generate a polarization-scrambled signal (using polarization transformer 14; column 4, lines 24-46);

(c) passing at least a fraction of an optical signal;

(d) transmitting the optical signal through the optical device;

(e) mixing (using coupler 7) the polarization-scrambled signal with the at least the fraction of the optical signal at an output of the optical device to produce a heterodyned signal, the heterodyned signal comprising a radio frequency signal component centered at a beat frequency, the beat frequency being equal to a difference between the local oscillator frequency and a carrier frequency of the optical signal (column 4, lines 14-22);

(f) analyzing frequency components and polarization components of the radio frequency signal component (using receiver 8 and processor 9; column 4, lines 14-67; column 6, lines 34-51);

(g) generating a set of frequency-resolved states of polarization from the frequency components and polarization components (column 6, lines 34-51); and

(h) repeating steps (a) through (g) to generate at least two sets of frequency-resolved states of polarization (column 4, lines 53-56); and

(i) calculating the polarization mode dispersion of the optical device from the at least two sets of frequency-resolved states of polarization (column 6, lines 34-51).

Regarding claim 21, again, Chowdhury et al. do not specifically disclose passing at least a fraction of an optical signal through a polarization controller, the polarization controller set to produce one of at least two input polarization states.

However, again, Boroditsky et al. teach a system that is related to the one disclosed by Chowdhury et al., including means for measuring polarization mode dispersion, and Boroditsky et al. further suggest a polarization controller PC1 set to sequentially produce at least two input polarization states of the at least the fraction of the optical signal through an optical device (Figure 1; see section "II. Experimental Setup and Results," especially the first three paragraphs

of that section). Regarding claims 24 and 25 in particular, Boroditsky et al. teach that the polarization controller provides at least three input polarization states alternatingly in time (see third paragraph under section "II. Experimental Setup and Results).

Regarding claims 21, 24, and 25, it would have been obvious to a person of ordinary skill in the art to include a polarization controller configured as suggested by Boroditsky et al. in the system disclosed by Chowdhury et al. in order to provide various inputs into the measurement system and thereby improve the accuracy of the measurements.

Regarding claim 22, Chowdhury et al. disclose that the optical device comprises a working channel of an optical telecommunication system, the method further comprising the step of tapping the at least the fraction of the optical signal from the working channel for mixing with the polarization-scrambled signal (Figure 1 shows an unlabeled coupler element that is coupled to transmitter 2 and transmits the optical signal into two paths).

Regarding claim 23, Chowdhury et al. disclose:

determining a correction factor for compensating the polarization mode dispersion of the working channel (column 4, lines 20-22; column 6, lines 34-46); and

applying the correction factor to the optical signal to compensate the polarization mode dispersion in the working channel (using PMD compensator 10; column 4, lines 20-22).

8. Claims 9-11 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bandemer et al. in view of Boroditsky et al.

Regarding claims 9-11, Bandemer et al. disclose a system as discussed above with regard to claim 1. Bandemer et al. further disclose a processor (including calculation unit 3 in Figure 1), the processor calculating a polarization mode dispersion of the optical device transmitting the

optical signal, wherein the optical device is a working optical channel, and further disclose a compensation system (PMD compensating unit 25 in Figure 7), wherein the processor further determines a compensation for feedback to the working optical channel, the compensation system receiving the compensation and modifying the optical signal to compensate for the polarization mode dispersion (column 6, lines 6-13).

Regarding claims 9-11, Bandemer et al. do not specifically disclose a polarization controller set to sequentially produce at least two input polarization states of the at least the fraction of the optical signal through an optical device, wherein at least two sets of frequency-resolved states of polarization are measured at an output of the optical device, one for each of the at least two input polarization states.

However, Boroditsky et al. teach a system that is related to the one disclosed by Bandemer et al., including means for measuring polarization mode dispersion, and Boroditsky et al. further suggest a polarization controller PC1 set to sequentially produce at least two input polarization states of the at least the fraction of the optical signal through an optical device, wherein at least two sets of frequency-resolved states of polarization are measured at an output of the optical device, one for each of the at least two input polarization states (Figure 1; see section "II. Experimental Setup and Results," especially the first three paragraphs of that section).

Regarding claims 9-11, it would have been obvious to a person of ordinary skill in the art to include a polarization controller configured as suggested by Boroditsky et al. in the system disclosed by Bandemer et al. in order to provide various inputs into the measurement system and thereby improve the accuracy of the measurements.

Regarding claim 21, as similarly discussed above with regard to claims 12 and 18, Bandemer et al. disclose a method for measuring a polarization mode dispersion of an optical device (Figure 1), comprising the steps of:

(a) tuning a local oscillator (laser 2) to a local oscillator frequency to generate a local oscillator signal (column 4, lines 35-41);

(b) polarization-modulating an initial state of polarization of the local oscillator signal to generate a polarization-scrambled signal (using polarization controller 4; column 4, lines 41-43);

(c) passing at least a fraction of an optical signal;

(d) transmitting the optical signal through the optical device;

(e) mixing (using coupler 5) the polarization-scrambled signal with the at least the fraction of the optical signal at an output of the optical device to produce a heterodyned signal, the heterodyned signal comprising a radio frequency signal component centered at a beat frequency, the beat frequency being equal to a difference between the local oscillator frequency and a carrier frequency of the optical signal (column 4, lines 43-52);

(f) analyzing frequency components and polarization components of the radio frequency signal component (column 4, lines 49-58);

(g) generating a set of frequency-resolved states of polarization from the frequency components and polarization components (column 4, lines 49-58); and

(h) repeating steps (a) through (g) to generate at least two sets of frequency-resolved states of polarization (column 4, lines 53-64); and

(i) calculating the polarization mode dispersion of the optical device from the at least two sets of frequency-resolved states of polarization (column 4, lines 55-58).

Regarding claim 21, again, Bandemer et al. do not specifically disclose passing at least a fraction of an optical signal through a polarization controller, the polarization controller set to produce one of at least two input polarization states.

However, again, Boroditsky et al. teach a system that is related to the one disclosed by Bandemer et al., including means for measuring polarization mode dispersion, and Boroditsky et al. further suggest a polarization controller PC1 set to sequentially produce at least two input polarization states of the at least the fraction of the optical signal through an optical device (Figure 1; see section "II. Experimental Setup and Results," especially the first three paragraphs of that section). Regarding claims 24 and 25 in particular, Boroditsky et al. teach that the polarization controller provides at least three input polarization states alternatingly in time (see third paragraph under section "II. Experimental Setup and Results).

Regarding claims 21, 24, and 25, it would have been obvious to a person of ordinary skill in the art to include a polarization controller configured as suggested by Boroditsky et al. in the system disclosed by Bandemer et al. in order to provide various inputs into the measurement system and thereby improve the accuracy of the measurements.

Regarding claim 22, Bandemer et al. disclose that the optical device comprises a working channel of an optical telecommunication system, the method further comprising the step of tapping the at least the fraction of the optical signal from the working channel for mixing with the polarization-scrambled signal (using coupler 26 shown in Figure 7; column 6, lines 9-12).

Regarding claim 23, Bandemer et al. disclose:

determining a correction factor for compensating the polarization mode dispersion of the working channel (column 4, lines 55-58); and

applying the correction factor to the optical signal to compensate the polarization mode dispersion in the working channel (using PMD compensating unit 25; column 6, lines 6-13).

***Allowable Subject Matter***

9. Claims 2-5 and 13-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including Chowdhury et al., Bandemer et al., and Boroditsky et al., does not specifically disclose or fairly suggest a system or method including the particular combination of all the elements, steps, and limitations recited in claims 2-5 and 13-17 (including all the limitations of any parent claims on which they depend), particularly wherein the system or method additionally includes the combination of a polarization analyzer, a photodetector, and a frequency analyzer (or steps corresponding to those elements) with the specific limitations recited in claims 2 and 13.

***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
CHRISTINA LEUNG
PRIMARY EXAMINER